

SECTION 2-5

SECTION SUMMARY

Comets, Asteroids, and Meteors

Guide for Reading

2

- ◆ What are the characteristics of comets and asteroids?
- ◆ Where do meteoroids come from?

The sun, planets, and moons aren't the only objects in the solar system. There are also millions of smaller objects, most of which are classified as comets and asteroids.

You can think of a **comet** as a "dirty snowball" about the size of an Earth mountain. **Comets are chunks of ice and dust whose orbits are usually very long, narrow ellipses.** Because their orbits are so elliptical, few comets pass near Earth. When a comet gets close enough to the sun, the ice turns into gas, releasing dust. The gas and dust form an outer layer called the *coma*. The inner layer of the comet is called the nucleus. The coma and the nucleus make up the comet's head, which is the brightest part of the comet. Some of the gas from a comet is pushed away from the sun by the solar wind. This forms the comet's tail. A comet's tail is stretched very thinly and can be hundreds of millions of kilometers long.

In 1705, the English astronomer Edmond Halley calculated that several observed comets had the same orbit. Halley suggested they were actually the same comet. He calculated that this comet appeared about every 76 years and predicted that it would reappear in 1758. When his prediction came true, the comet was named Halley's Comet.

Between 1801 and 1807, astronomers discovered four small objects between Mars and Jupiter. Over the next 80 years, they found 300 more. These objects, called **asteroids**, are too small and too numerous to be considered full-fledged planets. **Most asteroids revolve around the sun between the orbits of Mars and Jupiter.** This region of the solar system is known as the **asteroid belt**.

Astronomers have discovered more than 10,000 asteroids. Some come near Earth's orbit. An asteroid hit Earth 65 million years ago. It exploded, making a crater 200 kilometers in diameter in the Yucatan Peninsula of Mexico. The explosion probably started huge fires that destroyed much of Earth's forests and grass. Scientists hypothesize that this caused the extinction of many types of animals, including dinosaurs.

A **meteoroid** is a chunk of rock or dust in space. **Meteoroids usually come from comets or asteroids.** When a meteoroid enters the Earth's atmosphere, friction makes it burn up and produce a streak of light you see in the sky—a **meteor**. If a meteoroid is large enough, it may not burn up completely. Meteoroids that pass through the atmosphere and hit Earth's surface are called **meteorites**. Meteorites fall all over Earth. Most of them look like stones. A few are made almost entirely of iron and nickel and are unusually heavy for their size. This makes them more likely to be identified as meteorites than as Earth rocks.

SECTION 2-5**REVIEW AND REINFORCE**

Comets, Asteroids, and Meteors

◆ Understanding Main Ideas

Complete the following table.

Object	Description	Location/Movement
Asteroid		
Comet		
Meteoroid		

2

Answer questions 1 through 3 on a separate sheet of paper.

1. Explain what happens to a meteoroid in order for it to become a meteorite.
2. Describe these parts of a comet: head, nucleus, coma, tail.
3. How can you tell a meteor from a comet?

◆ Building Vocabulary

From the list below, choose the term that best completes each sentence.

asteroid asteroid belt comet
meteor meteoroid meteorite

4. When a meteoroid enters Earth's atmosphere, friction causes it to burn up and produce a streak of light called a(n) _____.
5. A chunk of ice and dust whose orbit is usually a long narrow ellipse is a(n) _____.
6. If a meteoroid hits Earth's surface, it is called a(n) _____.
7. An object that revolves around the sun, but is too small to be considered a planet, is a(n) _____.
8. A chunk of rock or dust in space that usually comes from a comet or an asteroid is called a(n) _____.
9. The region of the solar system between the orbits of Mars and Jupiter is known as the _____.